

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (previously presented) A non-naturally occurring enterokinase-cleavable fusion protein comprising a polypeptide comprising the formula:

(1) Z_1 -Xaa₁-Xaa₂-Xaa₃-Xaa₄-Asp-Arg-Xaa₅-Z₂ (SEQ ID NO:1),

wherein

(a) Z₁ is a ligand recognition sequence;

(b) Xaa₁-Xaa₂-Xaa₃-Xaa₄-Asp-Arg is an enterokinase recognition sequence, in which

Xaa₁ is Ala, Asp, Glu, Phe, Gly, Ile, Asn, Ser, or Val;

Xaa₂ is Ala, Asp, Glu, His, Ile, Leu, Met, Gln or Ser;

Xaa₃ is Asp, Glu, Phe, His, Ile, Met, Asn, Pro, Val, or Trp; and

Xaa₄- is Ala, Asp, Glu, or Thr; and

(c) Xaa₅-Z₂ is a protein of interest, in which Xaa₅ can be any amino acid and Z₂ is a polypeptide of at least one amino acid.

2. (previously presented) The fusion protein of claim 1, wherein

Xaa₁ is Asp,

Xaa₂ is Ile,

Xaa₃ is Asn,

Xaa₄-is Asp, and

Xaa₅-is Met, Thr, Ser, Ala, Asp, Leu, Phe, Asn, Trp, Ile, Gln, Glu, His, Val, Gly or Tyr.

3. (canceled)

4. (previously presented) The fusion protein of claim 1, wherein the ligand recognition sequence Z_1 is a streptavidin binding domain.

5. (original) The fusion protein of claim 4, wherein the streptavidin binding domain is selected from the sequences: His-Pro-Gln-Phe (SEQ ID NO:6), Cys-His-Pro-Gln-Phe-Cys (SEQ ID NO:5), Cys-His-Pro-Gln-Phe-Cys-Ser-Trp-Arg (SEQ ID NO:7), Trp-His-Pro-Gln-Phe-Ser-Ser (SEQ ID NO:210), Pro-Cys-His-Pro-Gln-Phe-Pro-Arg-Cys-Tyr (SEQ ID NO:211), and tandemly arranged combinations and repeats thereof.

6. – 49. (canceled)

50. (currently amended) The fusion protein according to claim 1, wherein said ligand recognition sequence Z_1 ~~is selected from the group consisting of: streptavidin, avidin, an antibody, a peptide antigen recognized by the antibody;~~ comprises the Myc-tag, the Flag peptide, the KT3 epitope peptide, an α -tubulin epitope peptide, ~~a polyhistidine tag,~~ a chitin binding domain, maltose binding protein (MBP), ~~and or~~ or a T7 gene 10-protein peptide tag.

51. (Previously presented) The fusion protein according to claim 1, wherein incubation of said polypeptide (SEQ ID NO:1) with enterokinase yields the protein of interest Xaa_5-Z_2 .

52. (new) The fusion protein of claim 1 wherein said ligand recognition sequence Z_1 comprises streptavidin or avidin.

53. (new) The fusion protein of claim 1 wherein said ligand recognition sequence Z_1 comprises an antibody.

54. (new) The fusion protein of claim 1 wherein said ligand recognition sequence Z₁ comprises a peptide antigen recognized by an antibody.

55. (new) The fusion protein of claim 1 wherein said ligand recognition sequence Z₁ comprises a polyhistidine tag.

56. (new) The fusion protein of claim 1 further comprising a signal sequence.

57. (new) The fusion protein of claim 1 wherein Xaa₁ is Asp.

58. (new) The fusion protein of claim 1 wherein Xaa₂ is Ile.

59. (new) The fusion protein of claim 1 wherein Xaa₃ is Asn.

60. (new) The fusion protein of claim 1 wherein Xaa₄ is Asp.

61. (new) The fusion protein of claim 1 wherein Xaa₅ is Arg, Lys, Cys, Met, Thr, Ser, Ala, Asp, Leu, Phe, Asn, Trp, Ile, Gln, Glu, His, Val, Gly or Tyr.

62. (new) The fusion protein of claim 1 wherein Xaa₅ is Arg, Lys, Met, Thr, Ser, Ala, Asp, Leu, Phe, Asn, Trp, Ile, Gln, Glu, His, Val, Gly or Tyr.

63. (new) The fusion protein of claim 1 wherein Xaa₅ is Arg, Met, Thr, Ser, Ala, Asp, Leu, Phe, Asn, Trp, Ile, Gln, Glu, His, Val, Gly or Tyr.

64. (new) The fusion protein of claim 1 wherein Xaa₅ is Met, Thr, Ser, Ala, Asp, Leu, Phe, Asn, Trp, Ile, Gln, Glu, His, Val, Gly or Tyr.

65. (new) The fusion protein of claim 1, wherein Xaa₁ is Asp, Xaa₂ is Ile, Xaa₃ is Asn, and Xaa₄-is Asp.

66. (new) The fusion protein of claim 1, wherein Xaa₁ is Ser, Xaa₂ is Leu, Xaa₃ is Asp, and Xaa₄-is Asp.

67. (new) The fusion protein of claim 1, wherein Xaa₁ is Phe, Xaa₂ is Ser, Xaa₃ is Glu, and Xaa₄-is Glu.

68. (new) The fusion protein of claim 1, wherein Xaa₁ is Ile, Xaa₂ is Glu, Xaa₃ is Asp, and Xaa₄-is Glu.

69. (new) The fusion protein of claim 1, wherein Xaa₁ is Ala, Xaa₂ is Ala, Xaa₃ is Val, and Xaa₄-is Glu.

70. (new) The fusion protein of claim 1 that is isolated.

71. (new) The fusion protein of claim 2, 4, 5, 50, 51, 52, 53, 54, 55, or 56 that is isolated.

72. (new) The fusion protein of claim 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, or 59 that is isolated.